

abdominal ♂ tip of *Andrena* the 7th urite is rounded, triangular, covering in the two small rhabdites on the 7th segment; those on the 8th are large, smooth, full, simple, not ending in apapilla, as in *Nomada*; the 9th urite is full, not so flat and excavated or as deep as in *Nomada*; the 10th tergite rounder and shorter than in *Nomada*.

LIST OF DRAGONFLIES TAKEN NEAR BUFFALO, N. Y.

BY E. P. VAN DUZEE.

During the seasons of 1895 and 1896 I took up the collection of the local Neuropteroid insects as a recreation from the heavier work I had been doing on the Hemiptera. The time at my disposal was very limited, only a few half-days during the summer, therefore it is not likely that this list, which enumerates 41 species, is anything like a fair representation of our local Odonat fauna.

The principal localities mentioned are the following: Squaw Island and Black Rock Harbor, in Niagara River, are within the limits of Buffalo City. Ridgeway, Ont., is on the north shore of Lake Erie, twelve miles west of Buffalo, and Point Abino is just beyond. Between these stations is a large swamp separated from the lakes by sand-dunes, reaching in places a height of 100 feet. About here is by far the best collecting grounds within many miles of Buffalo. Stations at Tonawanda and Amherst are on a deep stagnant creek which affords excellent breeding grounds for many of the Dragonflies. Colden and Boston are 20 miles southeast from Buffalo, among hills about 600 feet in height, where the country is well wooded in places, and traversed by rapid streams. Lancaster, Elma and Hamburg are on the level country, about 10 miles east and south from Buffalo. Clarence is farther east, and there and at Hamburg are bog swamps that harbor many Odonata and other insects both interesting and distressing.

Several interesting localities not far from Buffalo have not yet been visited for the Odonata. Among these is Niagara Falls, and it is not improbable that this and other places at Chippewa, the lower end of Grand Island, etc., will yield numbers of fine species not on this list. Two or three species from the upper end of Grand Island taken by Mr. Philip Fischer have been included to make this list more complete.

For the determination of these Dragonflies I am indebted to the kind-

ness of Dr. D. S. Kellicott, and Mr. P. P. Calvert has kindly undertaken to revise the list and publish it in connection with his additions to the list of Dragonflies of New York State :

Calopteryx maculata *Beauv.* This pretty insect makes its home in deep woods and in gullies among the hills where a rift in the foliage admits the sunlight to the little pools that form along the hill-side streamlets. Here they often congregate in great numbers on the bushes overhanging the water. On the level country about Buffalo this species is rarely seen and then only near water in the heaviest woods.

Lestes uncata *Kirby.* June to August. I have taken this species only in boggy woods where the water rarely if ever dries away during the summer. In such situations it flies about the swampy openings where the hot rays of the sun make the mosquitos lively and the collector miserable.

Lestes rectangularis *Say.* Not common. Taken near deep stagnant streams in August and September.

Argia putrida *Hagen.* Through July and August this species is common along some of our smaller creeks where a rapid current is broken by projecting stones. I have never seen it near still water as recorded by Dr. Kellicott.

Argia violacea *Hagen.* Rare. Taken in company with the preceding species in August.

Erythromma conditum *Hagen.* Taken flying over a ditch of running water at Hamburg, N. Y., in June.

Amphiagrion saucium *Burm.* Common about swampy places through July and August.

Enallagma carunculatum *Morse.* Very abundant from late June to September on Squaw Island in Niagara River and along the shores of Lake Erie where the shallow water is overgrown with reeds.

Enallagma hageni *Walsh.* Squaw Island, June 11th, two examples.

Enallagma exsulans *Hagen.* Taken immature at Black Rock Harbor about June 1st, and mature, in July in a bog swamp at Clarence.

Enallagma signatum *Hagen.* Numbers taken along a sluggish creek north of Williamsville in September.

Ischnura verticalis *Say.* This is the most abundant Agrion about Buffalo. It occurs in immense numbers on Squaw Island and along Niagara River and the shores of Lake Erie where fields of rushes

cover the shallow water. It is also common along all of our inland streams and ponds. Here they have been taken from May to September. The orange females appear to be more abundant than the blue.

Anomalagrion hastatum Say. Two males captured among the rushes on the shore of Lake Erie at Point Abino, August 8, 1896. The smallest of these expands but 20 mm.

Gomphus spicatus Selys. Taken in a tamarack swamp at Clarence in July, and rarely about Black Rock Harbor, in June.

Gomphus fraternus Say. Abundant along Niagara River in June. I have taken it only about still water.

Gomphus villosipes Selys. Taken on Grand Island, in Niagara River, by Mr. Philip Fischer, of this city.

Epiæschna heros Fab. Common. June and July. I can verify Dr. Kellicott's remark that this species seems to enter our houses from choice.

Boyeria (formerly **Fonscolombia**) **vinosa** Say. One example of this interesting species was taken by me from a bush in deep woods far up on a hillside at Colden, N. Y., August 11th, 1896. A little water run was near, represented then by an occasional pool, and here may have been the home of the larva.

Aeschna constricta Say. August and September. Taken immature in July. I have found this species most commonly in hilly country where a small brook meanders through open woods and pasture lands. In such places it is sometimes abundant. On the level country about Buffalo it is rarely seen.

Anax junius Drury. Common everywhere through June and July. I once watched one of these insects pursuing gnats about a spruce tree until it was so dark I could no longer discern him before the fading light in the western sky.

Macromia illinoensis Walsh. Taken by Mr. Philip Fischer on Grand Island. In July, 1895, I saw an example of this species resting on a store window in the heart of the city.

Epicordulia princeps. Common about Black Rock Harbor through June and July.

Tetragoneuria cynosura Say. June. With the next.

Tetragoneuria semiaquea Burm. Very abundant at Black Rock Harbor during June, 1895. Early in the month they were mostly soft

and immature. But even when fully matured they were sluggish and easy to capture. By the middle of July they had mostly disappeared.

Tetragoneuria spinigera *Selys*. One female taken on the side of a house nearly a mile from the river in May. Dr. Kellicott identified this as *spinigera* with some doubt, but expressed himself as certain that it was distinct from either of the two preceding.

Somatochlora tenebrosa *Say*. One example of this beautiful insect was taken in a tamarack swamp at Clarence, N. Y., July 2, 1895.

Somatochlora linearis *Hagen*. Taken on Grand Island by Mr. Philip Fischer.

Tramea lacerata *Hagen*. One specimen taken in the city far from the water on August 20th.

Libellula basalis *Say*. Common through June and July along Niagara River and Tonawanda Creek, where the water is deep.

Libellula quadrimaculata *Linn*. Numbers seen about a springy spot among the hills in July, 1895. These, though perfectly mature, were of a rich olive brown color, becoming greenish on the mesonotum, and the black basal triangles on the hind wings were conspicuously veined with white. Though differing in some respects from typical examples, Dr. Kellicott pronounces them undoubtedly *quadrimaculata*.

Libellula semifasciata *Burm*. June and July. Rare about Buffalo, but seen in considerable numbers along the railroad ditches at Ridgeway, Ont.

Libellula pulchella *Drury*. June to August. Abundant everywhere but especially about Black Rock Harbor.

Plathemis trimaculata *De Geer*. Common around mill-ponds and stagnant pools everywhere in the country about Buffalo, but rarely seen along Niagara River.

Leucorhinia intacta *Hagen*. Very abundant on the stones and water plants in Niagara River and Black Rock Harbor through June and early July. This species shows much variation in the extent of the yellow markings on the abdomen and of the fulvous shade on the base of the wings. When fully colored it is a most beautiful insect. Back in the country it is rarely seen, only a few individuals find their home along deep sluggish streams.

Diplax rubicundula *Say*. Common from July to September. The immature taken in June.

Diplax obtrusa Hagen. Clarence, N. Y., July 2d; Elma, N. Y., September 15th and Ridgeway, Ont., August 10th.

Diplax costifera Hagen. Common along a dusty roadway near a mill pond, in the town of Amherst, September 2, 1895. Not seen elsewhere.

Diplax vicina Hagen. This species with *rubicundula* and *obtrusa* occur together in low, wet meadows and along small streams, but *rubicundula* is here much the most abundant form. I have also taken *vicina* among the reeds on the shores of Lake Erie, at Point Abino.

Diplax corrupta Hagen. The immature of this large species were abundant on reedy shores of Lake Erie, at Point Abino, on August 31, 1896. In this state their rich fulvous color varied with black and pale green, and their glossy golden wings spread out to the sunlight, made them beautiful objects. When mature the colors become obscured and the insect is much less attractive.

Mesothemis simplicicollis Say. Quite abundant along Tonawanda Creek, August 12, 1896. Here the females were depositing their eggs on the confervæ near the shore. In doing this they hovered a few inches above the water, dipping to the surface at intervals of a few seconds with a rhythmic vibratory motion, each time bringing the tip of the abdomen in contact with the aquatic weeds that were to serve as a nidus for their eggs.

Pachydiplax longipennis Burm. Rare. A few examples were found in June, 1895, about the *Sagittaria* in Black Rock Harbor.

ADDITIONS TO THE ODONATA OF NEW YORK STATE.

BY PHILIP P. CALVERT, Philadelphia, Pa.

In this JOURNAL for March, 1895 (Vol. III, No. 1, pp. 39-48) I published a list, with notes, of all the species of Odonata known to me to inhabit New York State. Soon after, Dr. Lintner sent me notes on the Odonata in the State Collection at Albany, including many made by Dr. Hagen, and also a considerable number of unidentified dragonflies for determination. This material and the results of its study have been referred to by Dr. Lintner in his recently published Eleventh Report as State Entomologist, for 1895, p. 105, and are here marked (L.). Professor Kellicott has kindly sent me a few notes which are designated